

IN THE CLAIMS:

A complete listing of the claims is provided in accordance with the provisions of 37 CFR § 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

Claims 1-24 (Cancelled)

25. (Currently amended) An energy distribution network comprising:

- (a) at least one hydrogen generator ~~connected to~~ for generating hydrogen using electric energy received from at least one source of electric energy;
 - (b) at least one hydrogen storage reservoir for storing at least some of the hydrogen produced by said at least one hydrogen generator; and
 - (c) ~~a data collector connected to said at least one source of electric energy for collecting data from said at least one source of electric energy~~ at least one controller in communication with said at least one hydrogen generator and said at least one hydrogen storage reservoir for controlling the generation and storage of hydrogen, said at least one controller having a central processor and computer for receiving and processing data and for controlling the generation and storage of hydrogen based on said data, said data including data pertaining to a demand for hydrogen, data pertaining to availability of electric energy and data pertaining to the status of said at least one hydrogen generator.
26. (Original) An energy distribution network according to claim 25 wherein said hydrogen generator is a water electrolyser.
27. (Currently amended) An energy distribution network according to claim 25, wherein the data ~~collected from the source~~ pertaining to the availability of electric energy include price data.
28. (Cancelled)

29. (Currently amended) An energy distribution network according to claim ~~28~~ 25 wherein the data pertaining to availability of electric energy ~~availability data~~ include availability of electric energy from renewable energy resources.
30. (Currently amended) An energy distribution network according to claim 25 wherein the data pertaining to the status of said at least one hydrogen generator ~~collected from the source of electric energy~~ include the presence of an emergency.
31. (Currently amended) An energy distribution network according to claim 25 wherein the data pertaining to the availability ~~collected from the source~~ of electric energy include the presence of an interruption of electric energy.
32. (Cancelled)
33. (Cancelled)
34. (Cancelled)
35. (Cancelled)
36. (Currently amended) An energy distribution network according to claim 25, wherein the data pertaining to the availability of electric energy ~~is collected from the source of electric energy includes information on electric energy availability, said information being~~ selected from the group consisting of the amount of energy available, the nature of power available, the time of availability of the energy, the type of energy source available, the unit price per increment of energy available, the duration of delivery of said energy resource, and combinations thereof.
37. (Cancelled)
38. (Original) An energy distribution network according to claim 25, further comprising a hydrogen delivery system for delivering hydrogen to a hydrogen user.

39. (Original) An energy distribution network according to claim 25, further comprising a compressor operably connected to at least one of said hydrogen generator and said hydrogen storage reservoir for compressing hydrogen to a desired pressure.
40. (Currently amended) An energy distribution network according to claim 39 ~~further comprising a~~ wherein said data that is received and processed by said controller includes data pertaining to the status of said hydrogen storage reservoir and wherein said ~~controller for activating at least one of said hydrogen generator and said compressor~~ controls the generation and storage of compressed hydrogen when the hydrogen pressure in said at least one hydrogen storage reservoir falls below a selected minimum value.
41. (Currently amended) An energy distribution network according to claim 25 ~~further comprising a~~ wherein said data that is received and processed by said controller includes data pertaining to the status of said hydrogen storage reservoir and wherein said ~~controller for activating said hydrogen generator to generate~~ controls the generation and storage of hydrogen when the amount of stored hydrogen stored in said at least one hydrogen storage reservoir falls below a predetermined amount.
42. (Currently amended) An energy distribution network according to claim 25, wherein said at least one hydrogen generator generates hydrogen at a minimum desired pressure.
43. (Original) An energy distribution network according to claim 38, further comprising a user activation interface for receiving data concerning a demand for hydrogen.
44. (Cancelled)
45. (Currently amended) An energy distribution network according to claim ~~44~~ 25, wherein ~~information on user demand, energy resource availability, and hydrogen~~

~~production status~~ are said data that is received and processed by said controller
is selected from the group consisting of:

- a. the amount of hydrogen required by ~~said a~~ a hydrogen user;
- b. time of delivery of electrical energy to said at least one hydrogen generator;
- c. duration of period said electric energy is to be delivered to said at least one hydrogen generator;
- d. electric energy level to be sent to said at least one hydrogen generator;
- e. hydrogen pressure in said at least one hydrogen storage reservoir;
- f. rate of change in hydrogen pressure in said at least one hydrogen storage reservoir;
- g. volume of said at least one hydrogen storage reservoir;
- h. price of ~~electricity~~ energy and price forecast; and
- i. combinations thereof.

46. (Currently amended) A network according to claim 45, wherein said group further comprises:

- a. rate of electric energy level or the type of modulation of said electric energy ~~source~~ to said hydrogen generator; and
- b. types of electrical energy selected from fossil fuels, hydro, nuclear, solar and wind generated.

47. (Currently amended) A network according to claim 25, further comprising at least one a hydrogen user.

48. (Original) A network according to claim 47, wherein the hydrogen user comprises a device for converting hydrogen into electricity.

49. (Original) A network according to claim 25, wherein said at least one source of electric energy includes electrical conduits of a local area, wide area, or national area electricity distribution network.

50. (Original) A network according to claim 47, wherein the hydrogen user comprises a device for converting hydrogen into thermal energy.
51. (Original) A network according to claim 47, wherein said hydrogen user is an internal combustion engine.
52. (Original) A network according to claim 47, wherein said hydrogen user is an electricity generating fuel cell.
53. (Currently amended) A network according claim 47, wherein said hydrogen user comprises at least one of a device for converting hydrogen into electricity and a device for converting hydrogen into thermal energy, and wherein said hydrogen user serves at least one of a plurality of geographic zones associated with at least one building.
54. (Original) A network according claim 53 wherein said building is selected from the group consisting of an office, plant, factory, warehouse, shopping mall, apartment, and linked, semi-linked, or detached residential dwelling.
55. (Currently amended) A network according claim 53 wherein at least one of said geographic zones has a zone controller linked to said ~~data collector~~ controller.
56. (Currently amended) A network according to claim 47, wherein said hydrogen user is selected from the group consisting of a fuel cell, boiler, furnace, steam generator, turbine/motor generator[,] and ~~hydrogen storage facility~~ and catalytic converter.
57. (Currently amended) A network according to claim 47 wherein there is an exchange of data flow between said ~~data collector~~ controller and each of said at least one source of electric energy, said at least one hydrogen generator and said at least one hydrogen user.
58. (Currently amended) A network according to claim 25, wherein a plurality of said hydrogen generators are provided in said network, and wherein each of said

- hydrogen generators ~~are linked to~~ is in communication with said ~~data collector~~ controller.
59. (Currently amended) A network according to claim 25, wherein said at least one hydrogen generator receives electric energy from a plurality of electric energy sources ~~are provided in said network~~, and wherein data pertaining to availability of electric energy for each of said electric energy sources ~~are linked to~~ is received by said data collector controller.
60. (Currently amended) A network according to claim ~~25~~ 47, wherein a plurality of hydrogen users are provided in said network, and wherein each of said hydrogen users ~~are linked to~~ is in communication with said ~~data collector~~ controller.
61. (Currently amended) A network according to claim ~~44~~ 25 wherein said ~~information on user demand, energy resource availability and hydrogen production status~~ are data is received and processed by said ~~data collector~~ controller on an ongoing basis as said ~~data collector~~ controller controls the generation and storage ~~production~~ of hydrogen.
62. (Cancelled)
63. (Currently amended) A network according to claim 25, wherein the ~~production~~ generation of hydrogen is dynamically controlled by said ~~data collector~~ controller.
64. (Currently amended) A network according to claim 25, wherein a plurality of said at least one hydrogen generators are disposed at remote locations from one another and wherein said plurality of hydrogen generators are ~~linked to said network through said data collector~~ in communication with said controller.
65. (Cancelled)
66. (Original) A network according to claim 25 further comprising a system for delivering hydrogen as fuel to a vehicle.
67. (Cancelled)

- 68. (Cancelled)
- 69. (Cancelled)
- 70. (Cancelled)
- 71. (Cancelled)
- 72. (Cancelled)
- 73. (Cancelled)
- 74. (Cancelled)
- 75. (Cancelled)
- 76. (Cancelled)
- 77. (Cancelled)
- 78. (Cancelled)
- 79. (Cancelled)
- 80. (Cancelled)
- 81. (Cancelled)
- 82. (Currently amended) A network according to claim 25 wherein said at least one hydrogen storage reservoir comprises at least one hydride storage chamber.
- 83. (Currently amended) A network according to claim 25 wherein said at least one hydrogen storage reservoir comprises at least one container for storing pressurized hydrogen.
- 84. (Original) A network as claimed in claim 25 wherein said at least one electric energy source includes an electricity grid.

85. (Original) A network as claimed in claim 84 wherein electricity for said electricity grid is produced by at least one primary energy resource.
86. (Original) A network as claimed in claim 85 wherein said at least one primary energy resource includes one of the following renewable and non-renewable resources: fossil fuels, nuclear, wind, solar and hydro.
87. (Original) A network as claimed in claim 85 wherein said at least one primary energy resource includes one of the following renewable resources: wind, solar and hydro.
88. (Currently amended) A network as claimed in claim 84 25 wherein said energy source data pertaining to availability of electric energy includes real time data.
89. (Currently amended) A network as claimed in claim 84 25 wherein said energy source data pertaining to availability of electric energy includes historical data.
90. (Currently amended) A network as claimed in claim 84 25 wherein said energy source data pertaining to availability of electric energy includes forecasted data.
91. (Currently amended) A network as claimed in claim 84 wherein said energy source data pertaining to availability of electric energy includes ~~energy cost data~~ pertaining to the price of electric energy from the electricity grid.
92. (Currently amended) A network as claimed in claim ~~84~~ 25 wherein said controller modulates the generation of hydrogen by said at least one hydrogen generator based on ~~data including said energy source data~~ pertaining to availability of electric energy.
93. (Original) A network as claimed in claim 84 further comprising a device for converting hydrogen into electricity.
94. (Currently amended) A network as claimed in claim 93 wherein said controller modulates the generation of electricity by said hydrogen conversion device

based on ~~data including said energy source~~ said data pertaining to availability of electric energy.

95. (Original) A network as claimed in claim 94 wherein at least some of said electricity generated by said hydrogen conversion device is transmitted to said electricity grid.
96. (Original) A network according to claim 84 wherein said at least one electric energy source further includes at least one non-grid source of electric energy.
97. (Original) A network as claimed in claim 96 wherein electricity for said at least one non-grid source of electric energy is produced by at least one primary energy resource.
98. (Original) A network as claimed in claim 97 wherein said at least one primary energy resource includes one of the following renewable and non-renewable resources: fossil fuels, nuclear, wind, solar and hydro.
99. (Original) A network as claimed in claim 97 wherein said at least one primary energy resource includes one of the following renewable resources: wind, solar and hydro.
100. (Currently amended) A network as claimed in claim 96 wherein said controller selects said electric energy source based on data including said ~~energy source~~ data pertaining to the availability of electric energy.
101. (Original) A network as claimed in claim 100 further comprising a device for converting hydrogen into electricity.
102. (Currently amended) A network as claimed in claim 101 wherein said controller modulates the generation of electricity by said hydrogen conversion device based on data including said ~~energy source~~ data pertaining to availability of electric energy.

103. (Original) A network as claimed in claim 102 wherein at least some of said electricity generated by said hydrogen conversion device is transmitted to said electricity grid.
104. (Withdrawn) A process for controlling a hydrogen energy system comprising the steps of:
- a. processing data concerning a demand for hydrogen;
 - b. processing data concerning the status of at least one hydrogen storage apparatus;
 - c. processing data concerning the status of at least one hydrogen generator;
 - d. processing data concerning at least one energy source for said hydrogen generator; and
 - e. controlling the generation, storage and delivery of hydrogen in accordance with desired parameters to meet said demand for hydrogen.
105. (Withdrawn) A process as claimed in claim 104 wherein said energy source data includes data pertaining to the cost of said energy.
106. (Withdrawn) A process as claimed in claim 104 wherein said energy source data includes data pertaining to the emissions associated with said energy source.
107. (Withdrawn) A process as claimed in claim 104 wherein said step of controlling the generation, storage and delivery of hydrogen is carried out in order to meet said hydrogen demand at the lowest available cost.
108. (Withdrawn) A process as claimed in claim 104 wherein said step of controlling the generation, storage and delivery of hydrogen is carried out in order to meet said hydrogen demand using energy having the lowest available emissions.
109. (Withdrawn) A process as claimed in claim 104 wherein said step of controlling the generation of hydrogen includes the step of modulating the amount of hydrogen generated by said hydrogen generator.

110. (Withdrawn) A process as claimed in claim 104 further comprising the steps of processing data concerning the status of at least one device for converting hydrogen into electricity and controlling the generation of electricity in accordance with desired parameters to meet a demand for electricity.
111. (Withdrawn) A process as claimed in claim 104 wherein one or more of said process steps are performed simultaneously.
112. (Withdrawn) A process as claimed in claim 104 wherein said data for at least one of said process steps is real time data.
113. (Withdrawn) A process as claimed in claim 104 wherein said data for at least one of said process steps is historical data.
114. (Withdrawn) A process as claimed in claim 104 wherein said data for at least one of said process steps is forecasted data.
115. (Withdrawn) A process for meeting a demand for hydrogen comprising the steps of:
 - a. determining the nature of the hydrogen demand;
 - b. determining the availability of energy from at least one energy source;
 - c. determining the status of hydrogen supply; and
 - d. controlling the generation and delivery of hydrogen as required in accordance with desired parameters to meet the hydrogen demand.
116. (Withdrawn) A process as claimed in claim 115 wherein said step of determining the status of hydrogen supply comprises the steps of determining the status of hydrogen storage and determining the status of hydrogen generation.
117. (Withdrawn) A process as claimed in claim 116 wherein said step of controlling the generation and delivery of hydrogen as required further comprises the step of controlling the storage of hydrogen as required.

118. (Withdrawn) A process as claimed in claim 116 wherein hydrogen is delivered from at least one of hydrogen storage and hydrogen generation.
119. (Withdrawn) A process as claimed in claim 115 wherein said step of determining the availability of energy from at least one energy source includes the step of determining the cost of said energy.
120. (Withdrawn) A process as claimed in claim 115 wherein said step of determining the availability of energy from at least one energy source includes the step of determining the emissions associated with said energy source.
121. (Withdrawn) A process as claimed in claim 117 wherein said step of controlling the generation, storage and delivery of hydrogen is carried out in order to meet said hydrogen demand at the lowest available cost.
122. (Withdrawn) A process as claimed in claim 117 wherein said step of controlling the generation, storage and delivery of hydrogen is carried out in order to meet said hydrogen demand using energy having the lowest available emissions.
123. (Withdrawn) A process as claimed in claim 117 wherein said step of controlling the generation, storage and delivery of hydrogen includes the step of modulating the amount of hydrogen generated as required.
124. (Withdrawn) A process as claimed in claim 115 further comprising the step of controlling the generation and delivery of electricity as required in accordance with desired parameters to meet a demand for electricity.
125. (Withdrawn) A process as claimed in claim 115 wherein one or more of said process steps are performed simultaneously.
126. (Withdrawn) A process as claimed in claim 115 wherein said step of determining the availability of energy from at least one energy source includes real time data.
127. (Withdrawn) A process as claimed in claim 115 wherein said step of determining the availability of energy from at least one energy source includes historical data.

128. (Withdrawn) A process as claimed in claim 115 wherein said step of determining the availability of energy from at least one energy source includes forecasted data.